Chapter 1
Introduction

Background

California's Porter-Cologne Water Quality Control Act (Porter-Cologne Act) established the State Water Resources Control Board (State Water Board) and divided the state into nine regional basins, each with a Regional Water Quality Control Board (RWQCB) (California Water Code [Water Code] Section 13200). The State Water Board is the "principle state agency with the primary responsibility for the coordination and the control of water quality" in California (Water Code Section 13201).

The Porter-Cologne Act authorizes the State Water Board to draft state policies regarding water quality and, in accordance with Water Code Section 13263, to develop general waste discharge requirements (WDRs) and project-specific WDRs for projects that would discharge into state waters. The Water Code requires that RWQCBs adopt water quality control plans (Basin Plans) in accordance with Section 13240. The State Water Board is allowed, but not required, to adopt Basin Plans in accordance with Section 13170 of the Water Code.

In January 2000, the State Water Board, in its continuing efforts to control nonpoint source (NPS) pollution in California, adopted the *Plan for California's Nonpoint Source Pollution Control Program* (NPS Program Plan) (State Water Board 1999). The NPS Program Plan upgraded the State's first *Nonpoint Source Management Plan* adopted by the State Water Board in 1988 (1988 Plan) (State Water Board 1988). Upgrading the 1988 Plan with the NPS Program Plan brought the State into compliance with the requirements of Section 319 of the federal Clean Water Act (CWA) and Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA). On May 20, 2004 the State Board adopted the NPS Implementation and Enforcement Policy. The NPS Implementation and Enforcement Policy was adopted by the State Board to be in compliance with the 1999 amendment of the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) to enforce the state's NPS pollution control program. The program entitles the Water Boards to regulate all NPS pollution, and must meet five key elements:

- A NPS control implementation program's ultimate purpose must be explicitly stated and at a minimum address NPS pollution control in a manner that achieves and maintains water quality objectives.
- The NPS pollution control implementation program shall include a description of the management practices (MPs) and other program elements expected to be implemented, along with an evaluation program that ensures proper implementation and verification.
- The implementation program shall include a time schedule and quantifiable milestones, should the RWQCB so require.
- The implementation program shall include sufficient feedback mechanisms so that the RWQCB, dischargers, and the public can determine if the implementation program is achieving its stated purpose(s), or whether additional or different MPs or other actions are required.
- Each RWQCB shall make clear, in advance, the potential consequences for failure to achieve an NPS implementation program's objectives, emphasizing that it is the responsibility of individual dischargers to take all necessary implementation action to meet water quality requirements.

The RWQCBs have primary responsibility for ensuring that appropriate NPS control implementation programs are in place throughout the State. RWQCB responsibilities include, but are not limited to, issuing WDRs or a waiver of WDRs for individual discharges or a category of NPS discharges, or adopting a Basin Plan amendment that addresses NPS discharges. Since 1982, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has regulated NPS discharges from agricultural lands through a waiver of WDRs. Senate Bill (SB) 390 involved changes to Section 13269 of the Water Code and relates to how the Central Valley Water Board adopts waivers. The legislative change required that if the Central Valley Water Board adopts waivers, they must comply with the new Section 13269 or the dischargers operating under the 1982 waivers would need to submit Reports of Waste Discharge and obtain WDRs or comply with the Water Code. The Central Valley Water Board did not adopt a "series of resolutions" in response to the legislative changes, but adopted one resolution in December 2002, and replaced it with the existing one in July 2003.

In recent years the waiver program has been challenged by a number of public advocacy groups. These groups have sought the use of WDRs to control direct discharges and storm runoff from agricultural lands. In response, the Central Valley Water Board has modified the waiver program through a series of resolutions. In 2004, the Central Valley Water Board also embarked on an environmental review process through the California Environmental Quality Act (CEQA) to evaluate the effects of its waiver program and alternative NPS control programs for irrigated agriculture. However, the primary purpose of this CEQA process is to develop a long-term regulatory program for discharges from irrigated lands and to ensure that the surface waters receiving these discharges meet water quality objectives within ten years (see Resolution No. R5-2003-0105, Finding 41, page 9).

Purpose of Report

This existing conditions report has two central purposes. First, the information is intended to support the development of a number of alternative regulatory programs that can be used by the Central Valley Water Board to minimize the effects of discharges from irrigated agricultural land into waters of the state. Secondly, the information on current land uses and surface and groundwater quality in the Central Valley has been compiled to act as a baseline from which the environmental effects of various NPS control programs can be evaluated. The information collected to support these two purposes includes:

- A comprehensive survey of readily available and relevant digital coverage for the entire Central Valley in a geographic information systems (GIS) format.
  - topography
  - land use cover
  - water bodies
  - watershed boundaries
  - political boundaries
  - major roadways
- A comprehensive study of all existing information related to water quality observations within each of the watersheds.
  - general watershed parameters (acreage, land uses, major tributaries, flows, etc.)
  - impaired list status
  - constituents of concern
  - discharge pathways and sources of contaminants (to the extent known)
- A general description of groundwater conditions in the Central Valley Water Board's jurisdictional area.

Program Boundaries and Subdivisions

Central Valley Water Board Jurisdictional Area

The jurisdiction of Central Valley Water Board stretches from the Oregon border to the northern tip of Los Angeles County and includes all or part of 38 of the State's 58 counties. Three major watersheds have been delineated within this region, namely the Sacramento River Basin, the San Joaquin River Basin, and the Tulare Lake Basin. The three basins cover about 40% of the total area of the State and approximately 75% of the irrigated acreage (Central Valley Water Board 2002). Much of the surface water supplies in the Central Valley originate

north of the Sacramento–San Joaquin River Delta (Delta), while much of the water use is south of the Delta. While there is plenty of surface water in the Sacramento River Basin to meet the present level of demand, surface water supplies in the San Joaquin River and Tulare Lake Basins are inadequate to support the present level of agriculture and other development. In these basins groundwater resources are being used to meet existing water supply demands.

The crests of the Sierra Nevada Mountains on the east and the Coast Range and Klamath Mountains on the west border the Sacramento and San Joaquin River Basins. The Sacramento and San Joaquin River Basins cover about one fourth of the total area of the State and contain over 43% of the State's irrigable land. Surface waters from these two basins meet and form the Delta, which ultimately drains to San Francisco Bay. Major groundwater resources underlie both river valley floors.

The Sacramento River Basin covers 27,210 square miles. The principal streams in the basin are the Sacramento River and its larger tributaries: the Pit, Feather, Yuba, Bear, and American Rivers to the east; and Cottonwood, Stony, Cache, and Putah Creeks to the west. Major reservoirs include Shasta, Oroville, and Folsom. Of the eight subwatersheds within the Sacramento River Watershed, only one subwatershed is not listed as impaired from irrigated agriculture: the Upper Feather–Upper Yuba Subwatershed. Many of the subwatersheds within the Sacramento River Watershed are listed as impaired for various heavy metals from resource extraction.

The San Joaquin River Basin covers 15,880 square miles. The principal streams in the basin are the San Joaquin River and its larger tributaries, and the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. Major reservoirs include Pardee, New Hogan, Comanche, Millerton, McClure, Don Pedro, and New Melones. The San Joaquin River Basin is delineated into 12 basins. Of these 12, four are impaired for contaminants from irrigated agriculture. The remaining basins are all in the upper elevations, typically above the valley floor.

The Tulare Lake Basin comprises the drainage area of the San Joaquin Valley south of the San Joaquin River and encompasses approximately 17,650 square miles. The valley floor makes up slightly less than one-half the total basin land area. The Kings, Kaweah, Tule, and Kern Rivers, which drain the west face of the Sierra Nevada Mountains, provide the bulk of the surface water supply native to the basin. Major reservoirs are Pine Flat, Kaweah, Success, and Isabella. Imported surface water enters the Basin through the San Luis Canal/California Aqueduct System, Friant-Kern Canal, and the Delta-Mendota Canal. Of the 10 subwatersheds in the Tulare Lake Basin, only one subwatershed is impaired from irrigated agriculture. This subwatershed comprises the entire valley floor and is called the South Valley Floor Subwatershed.

Of the 30 subwatersheds that comprise the Sacramento River, San Joaquin River, and Tulare Lake Basins, 12 are listed as impaired due to agriculture. These 12 subwatersheds will be the focus of attention during development of the

Irrigated Lands Program. All area in the jurisdiction of the Central Valley Water Board is described in this report.

Surface Water

The Central Valley is divided into three major surface water basins: the Sacramento River Basin Watershed, the San Joaquin River Basin Watershed, and the Tulare Lake Basin Watershed (Figure 1-1). Each of these three basins is divided into subwatersheds delineated by the California Department of Water Resources (DWR) CalWater boundaries, or a hybrid of these boundaries if the hybrid was determined to be more accurate in defining the watershed (Figures 3-1, 3-2, and 3-3 in Chapter 3). The subwatersheds in each of the three basins are listed below.

Sacramento River Basin Watershed

1. Pit River Subwatershed
2. Shasta-Tehama Subwatershed
3. Butte-Sutter-Yuba Subwatershed
4. Upper Feather River–Upper Yuba River Subwatershed
5. Lake-Napa Subwatershed
6. Colusa Basin Subwatershed
7. Solano-Yolo Subwatershed
8. American River Subwatershed

San Joaquin River Basin Watershed

1. Delta-Mendota Canal Subwatershed
2. San Joaquin River Subwatershed
3. San Joaquin Valley Floor Subwatershed
4. Delta-Carbona Subwatershed
5. Ahwahnee Subwatershed
6. Mariposa Subwatershed
7. Upper Mokelumne River–Upper Calaveras River Subwatershed
8. Merced River Subwatershed
9. North Valley Floor Subwatershed
10. Stanislaus River Subwatershed
11. Tuolumne River Subwatershed
12. Cosumnes River Subwatershed

Tulare Lake Basin Watershed

1. Kings River Subwatershed
2. Kaweah River Subwatershed
3. Kern River Subwatershed
4. South Valley Floor Subwatershed
5. Grapevine Subwatershed
6. Coast Range Subwatershed
7. Fellows Subwatershed
8. Temblor Subwatershed
9. Sunflower Subwatershed
10. Southern Sierra Subwatershed

Groundwater

The groundwater basins within the three major watersheds of the Central Valley have been delineated using the boundaries contained in DWR Bulletin 118. Figures 4-2, 4-3, and 4-4 in Chapter 4 show the boundaries of these basins. A list of these basins follows.

Sacramento River Basin

1. Sacramento Valley Basin
   a. Antelope Subbasin
   b. Bend Subbasin
   c. Capay Valley Subbasin
   d. Colusa Subbasin
   e. Corning Subbasin
   f. Dye Creek Subbasin
   g. East Butte Subbasin
   h. Los Molinos Subbasin
   i. North American Subbasin
   j. North Yuba Subbasin
   k. Red Bluff Subbasin
   l. Solano Subbasin
   m. South American Subbasin
   n. South Yuba Subbasin
   o. Sutter Subbasin
   p. Vina Subbasin
   q. West Butte Subbasin
   r. Yolo Subbasin
2. Alturas Area Basin
   a. South Fork Pitt River Subbasin
   b. Warm Springs Valley Subbasin
3. American Valley Basin
4. Antelope Creek Basin
5. Ash Valley Basin
6. Bear Valley Basin
7. Berryessa Valley Basin
8. Big Valley Basin (5-15)

9. Big Valley Basin (5-4)
10. Blanchard Valley Basin
11. Burney Creek Valley Basin
12. Burns Valley Groundwater Basin
13. Butte Creek Valley Basin
14. Cayton Valley Basin
15. Chrome Town Area Basin
16. Clear Lake Cache Formation Basin
17. Clover Valley Basin
18. Collayomi Valley Groundwater Basin
19. Coyote Valley Basin
20. Dixie Valley Basin
21. Dry Burney Creek Basin
22. Egg Lake Valley Basin
23. Elk Creek Area Basin
24. Fairchild Swamp Area Basin
25. Fall River Valley Basin
26. Funks Creek Basin
27. Goose Valley Basin
28. Goose Lake Valley Basin
    a. Fandango Valley Subbasin
    b. Lower Goose Lake Valley Subbasin
29. Grays Valley Basin
30. Grizzly Valley Basin
31. High Valley Basin
32. Hot Springs Valley Basin
33. Humbug Valley Basin
34. Jess Valley Basin
35. Joseph Creek Basin
36. Lake Almanor Valley Basin
37. Lake Britton Area Basin
38. Last Chance Creek Valley Basin
39. Little Indian Valley Basin
40. Long Valley Basin (5-31)
41. Long Valley Basin (5-44)
42. Lower Lake Basin
43. McCloud Area Basin
44. Meadow Valley Basin
45. Middle Creek Basin
46. Middle Fork Feather River Basin
47. Mohawk Valley Basin

48. North Fork Battle Creek Basin
49. North Fork Cache Creek Basin
50. Pondosa Town Area Basin
51. Pope Valley Basin
52. Redding Area Basin
    a. Bowman Subbasin
    b. Rosewood Subbasin
    c. Anderson Subbasin
    d. Enterprise Subbasin
    e. Millville Subbasin
    f. South Battle Creek Subbasin
53. Rock Prairie Basin
54. Round Valley Basin
55. Scotts Valley Basin
56. Sierra Valley Basin
    a. Chilcoot Subbasin
    b. Sierra Valley Subbasin
57. Squaw Flat Basin
58. Stony Gorge Reservoir Basin
59. Stonyford Town Area Basin
60. Toad Well Area Basin
61. Upper Lake Basin
62. Yellow Creek Valley Basin

San Joaquin Valley Groundwater Basin—San Joaquin River Hydrologic Region

1. Cosumnes Subbasin
2. Eastern San Joaquin Subbasin
3. Tracy Subbasin
4. Modesto Subbasin
5. Turlock Subbasin
6. Merced Subbasin
7. Delta-Mendota Subbasin
8. Chowchilla Subbasin
9. Madera Subbasin

San Joaquin Valley Groundwater Basin—Tulare Lake Hydrologic Region

1. Westside Subbasin
2. Kings Subbasin
3. Tulare Lake Subbasin

4. Kaweah Subbasin
5. Tule Subbasin
6. Kern County Subbasin
7. Pleasant Valley Subbasin
8. Small Groundwater Basins
    a. Panoche Valley
    b. Kern River Valley
    c. Walker Basin Creek Valley
    d. Cummings Valley
    e. Tehachapi Valley West
    f. Castaic Lake Valley
    g. Vallecitos Creek Valley
    h. Brite Valley
    i. Cuddy Canyon Valley
    j. Cuddy Ranch Area
    k. Cuddy Valley
    l. Mil Portero Area

Methodology for Data Collection

Collection of resources and data for surface water quality descriptions was accomplished by using various state and federal agency websites, water quality reports from various water quality coalitions, and other hard copy reports. Most of the surface water information came from existing reports. Because this existing conditions report covers such a large geographical area, however, information to assess a particular watershed was often insufficient. In those cases, best professional judgment and technical hydrological experience were used in the analysis.

Many types of data for surface water analysis are available from government agencies (e.g., DWR; U.S. Geological Survey [USGS]; U.S. Department of the Interior (DOI), Bureau of Reclamation [Reclamation]) that routinely measure river flow, temperature, salinity, and other water quality parameters. Different agencies have collected data during various time periods, at different stations and with different parameters. These data are stored in various public and private databases, operated by multiple agencies, making it difficult for stakeholders, agencies, or interested persons to access the full range of available data. Each type of data must be individually downloaded, processed, compiled, and compared.

Sources of information for each groundwater subbasin included primarily reports and data from DWR, California Department of Pesticide Regulation (DPR) and USGS. Specifically, land use data came from the DWR land use surveys conducted periodically throughout California. DWR 2004 Bulletin 118 was the primary source of information for subbasin hydrogeologic and physiographic descriptions.

Preparers

Preparation of the existing conditions report was overseen by staff of the Central Valley Water Board and was compiled by members of the Jones & Stokes consultant team. Jones & Stokes staff prepared the surface water and regulatory sections. HydroFocus compiled the Sacramento Basin groundwater information and Geomatrix compiled groundwater information for the San Joaquin and Tulare Lake Basins. Agricultural land management practices were compiled by Dr. Mark Roberson and managed wetlands practices were compiled by Joel Miller.